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Claim Listing

28. (currently amended) A method in a papermaking machine comprising the steps of:

conveying a web, supported by a fabric over a first cylinder, wherein the web is between the first cylinder and the supporting fabric, the fabric having a first side adjacent the web, and a second side opposite the web;

guiding the web supported by the fabric from an opening nip defining a disengaging point between the supporting fabric and the first cylinder, toward a roll, thus forming a web run between said first cylinder and said roll;

supporting the web run from the opening nip, toward said roll by creating a negative pressure region on the fabric second side, the negative pressure being divided into a intensified negative pressure region close to the disengaging point between the supporting fabric and the first cylinder, and a less intense negative pressure region spaced from the disengaging point;

increasing and decreasing the negative pressure in the intensified negative pressure region according to a function which is based on at least one parameter which acts on the runability of the web and ~~which can be varied or~~ which varies during the run, the at least one parameter chosen from the group consisting of:

~~- the web velocity;~~

~~- the web solids content;~~

- the web pulp composition,

~~- the web quality being produced;~~

- the web grammage,

- the web porosity,

- the web tension,

- the first cylinder temperature,

~~- the web being broken;~~

~~- the web being threaded;~~

~~- the web being in a normal run;~~

so that a desired runability is maintained between the cylinder and the roll.

29. (previously presented) The method of claim 28, wherein the negative pressure in the intensified negative pressure region is greater than 500 Pa, and less than 20,000 Pa, and the pressure in the less intense negative pressure region is between 10 and 700 Pa.

30. (previously presented) The method of claim 28, wherein the negative pressure in the intensified negative pressure region is greater than 1,000 Pa, and less than 10,000 Pa, and the pressure in the less intense negative pressure region is between 200 and 300 Pa.

31. (previously presented) The method of claim 28, wherein the first cylinder is in a drying section of the papermaking machine and wherein the web is guided from the first cylinder to the roll which redirects the travel of the web, and wherein the negative pressure in the intensified negative pressure region is higher than the negative pressure which is drawn on a surface of the roll.

32. (previously presented) The method of claim 28, wherein the negative pressure is controlled in the intensified negative pressure region so that a desired difference in web tension is obtained between a drying section and a press section in order to optimise the web characteristics.

33. (previously presented) The method of claim 28, wherein the intensified negative pressure region extends about 40 to about 140 mm, and no more than 300mm from the disengaging point, in the direction of web travel.

34. (previously presented) The method of claim 28, wherein the intensified negative pressure region extends about 40 mm to about 100 and no more than 300 mm from the disengaging point, against the direction of web travel.

35. (previously presented) The method of claim 28, wherein in the drying section the travel of the web is supported by the intensified pressure region when the web has a dry solids content of less than 65 %.

36. (Canceled)

37. (previously presented) The method of claim 28, wherein the travel of the web is supported in the intensified negative pressure region by a negative pressure, which is higher the lower the strength of the web is.

38. (previously presented) The method of claim 28, wherein the travel of the web is supported in the intensified negative pressure region by a negative pressure, which is higher the less chemical pulp the web contains.

39. (previously presented) The method of claim 28, further including cylinders positioned at the beginning of a multiplicity of drying cylinders forming a drying section over which the web and the fabric are wrapped to form a multiplicity of opening nips defining a multiplicity of disengaging points between the supporting fabric and the multiplicity of dryer cylinders, each opening nip associated with one of said first cylinders, having a related intensified negative pressure region, wherein the cylinders, are threaded full width, with the aid of the intensified negative pressure regions associated with the cylinders positioned at the beginning of said multiplicity of first cylinders.

40. (previously presented) The method of claim 39, wherein during the threading with full width, there is used a more intense pressure in the intensified negative pressure regions than during a normal run or a web break.

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41. (previously presented) The method of claim 28, wherein the travel of the web is supported by an intensified negative pressure generated mainly at the opening nip of each drying cylinder in a drying section, where drying of a web formed from weak pulp is taking place.

42. (previously presented) The method of claim 28 wherein a blow box is arranged on the second side of the supporting fabric to generate said intensified negative pressure region and air is ejected away from the intensified negative pressure region by at least one ejection nozzle arranged in the blow box at the upstream side of the intensified negative pressure region, and that air is prevented from flowing to the intensified negative pressure region by a throttling means arranged at the output side of the intensified negative pressure region in the blow box.

43. (previously presented) The method of claim 42, wherein additionally, air is sucked from the intensified negative pressure region by means creating suction arranged in the blow box at the intensified negative pressure region.

44. (previously presented) The method of claim 28, wherein the first drying cylinder is part of a drying section and wherein a blow box is arranged on that side of the supporting fabric which is opposite to the web, to generate said intensified negative pressure region between the supporting fabric and the blow box, wherein;
air is sucked away from the intensified negative pressure region by means arranged in the blow box at the intensified negative pressure region, and, wherein;
air is prevented from flowing to the intensified negative pressure region by a throttling means arranged in the blow box at the downstream and upstreamed sides of the intensified negative pressure region.

45. (previously presented) The method of claim 28 wherein the roll is a turn roll.

46. (previously presented) The method of claim 28 wherein the roll is a second drying cylinder.

47. (previously presented) The method of claim 28 wherein the roll is a suction roll.

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48. (currently amended) A device in the drying section of a paper machine comprising:

a drying section having at least one drying cylinder;

a supporting fabric;

a roll, downstream of the drying cylinder for redirecting the travel of the supporting fabric;

means for conveying a web which is supported by the supporting fabric over said at least one drying cylinder, the web being between the at least one drying cylinder and the supporting fabric;

means for guiding the web from an opening nip between said cylinder and the supporting fabric toward said roll when supported by the supporting fabric, and

means for creating a negative pressure which supports the travel of the web on that side of the web which is opposite the supporting fabric, when the web passes from the opening nip to said roll, the means for creating a negative pressure creating an intensified negative pressure in a region which covers the disengaging point between the supporting fabric and the drying cylinder, and

a lesser negative pressure in a region which is at a distance from the disengaging point,

a control means for increasing and decreasing the negative pressure in said intensified negative pressure region according to at least one parameter which acts on the runability of the web and which ~~can be~~ is varied during the run, the at least one parameter being selected from the group consisting of:

~~- the web velocity;~~

~~- the web solid contents;~~

- the web pulp composition,

~~- the web paper quality being produced;~~

- the web grammage,

- the web porosity,

- the web tension,

- the drying cylinder temperature,

~~-the web being threaded;~~

~~-the web being in a normal run~~; and

so that a selected runability is maintained between the cylinder and the roll.

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49. (previously presented) The device of claim 48, wherein the means for creating the negative pressure supporting the travel of the web comprises a blow box, the blow box having an injection nozzle positioned upstream of the intensified negative pressure region, to eject air away from between the blow box and the supporting fabric, and wherein the blow box incorporates a throttling means, downstream of the intensified pressure region for preventing air from flowing into the intensified pressure region

50. (currently amended) The device of claim 49, further comprising means positioned in the blow box between said ~~ejection~~ injection nozzle and the throttling means for connecting the intensified negative pressure region to the means for creating a negative pressure.

51. (previously presented) The device of claim 48, wherein the means for creating a negative pressure for supporting the travel of the web comprise a suction box,

which in the intensified negative pressure region is connected to a means for providing a negative pressure between the suction box and the supporting fabric, and

in which, at an upstream border and a downstream border of the intensified negative pressure region, there are arranged seals for preventing air from flowing into the intensified negative pressure region.

52. (previously presented) The device of claim 51, wherein the seals arranged at the upstream border of the intensified negative pressure region comprise ejection nozzles which eject air away from the intensified negative pressure region.

53. (previously presented) The device of claim 48, wherein the negative pressure in the intensified negative pressure region is > 500 Pa, but < 20000 Pa.

54. (previously presented) The device of claim 48, wherein the intensified negative pressure region is created in a region which extends from a disengaging point defined by the opening nip between the supporting fabric and the drying cylinder no more than 300 mm downstream of the disengaging point, and no more than 300 mm upstream of the disengaging point.

55. (previously presented) The device of claim 54, wherein the intensified negative pressure region is created in a region which extends from the disengaging point defined by the opening nip between the supporting fabric and the drying cylinder about 40 to about 140 mm downstream of the disengaging point and about 40 mm to about 100 mm upstream of the disengaging point.

56. (previously presented) The device of claim 48, wherein the control means comprises means for controlling the negative pressure in the intensified negative pressure region according to a speed obtained by measurement of web velocity.

57. (Canceled)

58. (previously presented) The device of claim 48, wherein the control means comprises means for controlling the negative pressure in the intensified negative pressure region according to the web tension obtained by measurement.

59. (previously presented) The device of claim 48, wherein the device is arranged in the drying section of a paper machine provided with a twin wire run.

60. (previously presented) The device of claim 48, wherein the device is arranged in the drying section of a paper machine provided with a single wire run.

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61. (previously presented) The device of claim 48 wherein the roll is a turn roll.

62. (previously presented) The device of claim 48 wherein the roll is a second drying cylinder.

63. (previously presented) The device of claim 48 wherein the roll is a suction roll.